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09/574,411	05/18/2000	Yutaka Yokoyama	13613	7920

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EXAMINER

REKSTAD, ERICK J

ART UNIT	PAPER NUMBER
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2613

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DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/574,411

Applicant(s)

YOKOYAMA ET AL.

Examiner

Erick Rekstad

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-16, and 18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-16 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

This Office Action is in response to Applicant's Amendment dated December 12, 2003 in response to USPTO Office Action dated October 6, 2003.

The amendments to claims 1-18 and to the Specification has been noted and entered in the record.

The amendments to claims 15, 16 and 18 have overcome the 35 U.S.C 112 second paragraph rejection.

The amendments to claims 1, 4, and 12 render Applicant's remarks relative to said claims 1, 4 and 12 moot in view of the new ground of rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 12 and 14 are rejected under 35 U.S.C 103(a) as being unpatentable over US Patent 5,883,672 to Suzuki et al in view of US Patent 6,091,460 to Hatano et al.

[claims 1, 2, 12 and 14]

Suzuki teaches the use of a video coding apparatus comprising: coding/decoding circuitry for providing motion-compensated inter-frame prediction coding on input frames by using reference frames so that the input frames are coded into an intra-frame coded picture, a predictive coded picture or a bi-directionally predictive coded picture and decoding said coded frames to produce said reference frames (Fig. 6). Suzuki further teaches the decision circuitry (50,31, and 32) for determining a magnitude of motion of said input frames relative to said reference frames and a time-varying rate of said magnitude. Suzuki teaches varying the GOP based on the magnitude of motion and the time-varying rate of said magnitude (Col 15 Lines 38-65, Fig.6 and 7). Suzuki does not teach the determining an interval between successive frames of said predictive coded picture. Suzuki does not teach the specific method of adjusting the GOP size. Hatano describes a video coding apparatus comprising a coding/decoding circuitry (Fig. 20), and a decision circuitry (46 in Fig. 21). The decision circuitry determines a magnitude of motion of input frames relative to reference frames, determining an interval between successive frames of said predictive coded picture according to the magnitude of motion, and reordering said input frames according to the determined interval. The decision circuitry is configured to increment said interval when said magnitude of motion is smaller than a first threshold and decrement said interval when said magnitude of motion is greater than a second threshold. (Col 16 Lines 33-67, Fig. 20-22c). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the video coding apparatus of Suzuki with the interval adjusting method of Hatano in order to provide the method for adjusting the GOP size.

Claims 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki and Hatano as applied to claim 1 above, and further in view of US Patent 6,473,459 to Sugano et al.

[claims 3]

Suzuki teaches the adjusting of the GOP based on a magnitude of motion and a time-varying rate of said magnitude (Col 15 Lines 38-65). Suzuki does not teach the use of thresholds. Hatano teaches the use of adjusting the GOP using a threshold for the magnitude of motion (Col 16 Lines 33-67). Hatano does not teach the use of a threshold with the time-varying rate of said magnitude. Sugano teaches the use of multiple variables and thresholds to adjust the GOP (Col 7 Lines 27-43, Fig. 7). It would have been obvious to one of ordinary skill in the art to combine the system of Suzuki and Hatano with the thresholds of Sugano in order to adjust the GOP based on the magnitude of motion and a time-varying rate of the magnitude as required by Suzuki.

Claims 13, 15, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki and Hatano as applied to claim 12 above, and further in view of US Patent 6,473,459 to Sugano et al and in further view of US Patent 5,565,920 to Lee et al.

[claim 13]

Suzuki and Hatano teach the system of claim 12. Hatano teaches the detecting motion vectors in said input frame (Fig. 2). Hatano and Suzuki do not teach the mean value of the detected motion vectors to represent said magnitude of motion and a time varying rate of said mean value. Sugano teaches the use of a mean value calculation

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circuitry (14 in Fig. 2) to determine the mean (average) motion vector (Col 5 Lines 26-38, Fig. 10). Lee teaches the adjusting of the GOP based on the global motion (motion between frames as a whole) in order to reduce the bit rate of an mpeg stream (Col 2 Lines 16-36, 51-63, Fig. 29a-c). It would be obvious to one skilled in the art at the time of the invention that a mean motion vector is the global motion for a frame (Official Notice). It would be obvious to one skilled in the art at the time of the invention to modify the system of Suzuki and Hatano with the mean motion vector of Sugano and GOP adjusting method of Lee in order to reduce the bit rate of an mpeg stream.

[claim 15]

Suzuki teaches the adjusting of the GOP based on a magnitude of motion and a time-varying rate of said magnitude (Col 15 Lines 38-65). Suzuki does not teach the use of thresholds. Hatano teaches the use of adjusting the GOP using a threshold for the magnitude of motion (Col 16 Lines 33-67). Hatano does not teach the use of a threshold with the time-varying rate of said magnitude. Sugano teaches the use of multiple variables and thresholds to adjust the GOP (Col 7 Lines 27-43, Fig. 7). It would have been obvious to one of ordinary skill in the art to combine the system of Suzuki and Hatano with the thresholds of Sugano in order to adjust the GOP based on the magnitude of motion and a time-varying rate of the magnitude as required by Suzuki.

[claims 16 and 18]

Hatano teaches the use of  $f(i,j)$  to represent the image signal, where  $i$  represents the pixel number in the horizontal direction and  $j$  represents the pixel number in the vertical direction. Hatano also teaches that  $g(l,j)$  represents a past picture (Col 35 Lines

8-14). Hatano increments through all the i and j components to determine the difference between two images (Col 35 Equation F21). Hatano does not specifically teach obtaining the horizontal and vertical components separately and then using the components to determine change in the digital video signal. Sugano teaches the operation of obtaining the horizontal and vertical components separately and then using the components to determine change in the video signal (Col 5 Lines 27-35, Fig. 7). It would be obvious to one skilled in the art at the time of the invention to modify Hatano's equation to use Sugano's method to obtain the difference only in the horizontal direction and only in the vertical direction.

Claims 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano in view of US Patent 6,473,459 to Sugano et al and in further view of US Patent 5,565,920 to Lee et al.

[claims 4-6, 10, and 11]

Hatano describes a video coding apparatus comprising of a first memory (21) for storing a plurality of input frames, a second memory (24a-b) for storing reference frames, motion vector detection circuitry (17), coding/decoding circuitry (Fig. 20) and decision circuitry (40)(Col 34 Lines 43-67, Col 35, Fig. 8,20-21). Hatano does not teach the use of a mean value calculation circuitry or the time-varying rate of said mean value. Sugano teaches the use of a mean value calculation circuitry (14 in Fig. 2) to determine the mean (average) motion vector (Col 5 Lines 26-38, Fig. 10). Lee teaches the adjusting of the GOP based on the global motion (motion between frames as a whole) in order to reduce the bit rate of an mpeg stream (Col 2 Lines 16-36, 51-63, Fig. 29a-c).

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It would be obvious to one skilled in the art at the time of the invention that a mean motion vector is the global motion for a frame (Official Notice). It would be obvious to one skilled in the art at the time of the invention to modify the system of Hatano with the mean motion vector of Sugano and GOP adjusting method of Lee in order to reduce the bit rate of an mpeg stream.

[claims 7 and 9]

Hatano teaches the use of  $f(i,j)$  to represent the image signal, where  $i$  represents the pixel number in the horizontal direction and  $j$  represents the pixel number in the vertical direction. Hatano also teaches that  $g(l,j)$  represents a past picture (Col 35 Lines 8-14). Hatano increments through all the  $i$  and  $j$  components to determine the difference between two images (Col 35 Equation F21). Hatano does not specifically teach obtaining the horizontal and vertical components separately and then using the components to determine change in the digital video signal. Sugano teaches the operation of obtaining the horizontal and vertical components separately and then using the components to determine change in the video signal (Col 5 Lines 27-35, Fig. 7). It would be obvious to one skilled in the art at the time of the invention to modify Hatano's equation to use Sugano's method to obtain the difference only in the horizontal direction and only in the vertical direction.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


### **Contacts**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 703-305-5543. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on 703-305-4856. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Erick Rekstad

  
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